

International Conference on **Sports Medicine and Fitness**

March 23-25, 2015 Chicago, USA

Analysis of the back squat with and without knee wraps

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Knee wraps are typically worn to both support the knee joint and gain mechanical advantage during the back squat exercise, and they are also often used to increase the load lifted or the number of repetitions performed with a given load. In general, when the knee is flexed against an external resistance during the back squat exercise, the knee wrap(s) elastic material is stretched during the eccentric phase, and returns this energy during the concentric phase. This potential accumulated energy is transferred to the lifter and added to the strength of the movement, this additional force is known as carry-over. Therefore, wearing knee wraps may affect traditional movement patterns by increasing mechanical output during the back squat exercise, and consequently change exercise technique. Additionally, since the back squat exercise is a multi-joint exercise, any effect on the extensor knee torque may alter the level of internal torque in both the knee and hip joints, and this may result in a different bar displacement pattern.

Biography

Paulo Marchetti is Supervisor of Human Movement Sciences Graduate Program at UNIMEP and has over 16 years experience in researching stretching, resistance training and biomechanics. He is Post-doctoral Research Fellow in the Institute of Orthopedics and Traumatology at Medical School (USP), PhD in Biomechanics and Motor Control and MSc in Kinesiology (Biomechanics and Motor Control) at USP, Specialist in Exercise Physiology and Physical Training at UNIFESP, and he has over fifty research publications. He is a NSCA member, Cybex Institute Member, and Chief Editor in section of Sports Medicine of the International Archives of Medicine.

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